

Rainforest pharmacy

Half of all globally approved drugs originate from plants. To date, potential active ingredients for treating cancer have been discovered in 1,400 tropical plants. The first active ingredient for the first birth control pill was found in the root of the Mexican yam plant. Important drugs include the muscle relaxant tubocurarine, obtained from a tropical liana. The cinchona tree from the Amazon rainforest supplies the active ingredient quinine, used successfully for decades to treat malaria. In the Amazon rainforest, indigenous peoples use the sap of the dragon blood tree “*Croton lechleri*” as a medicine. The sap is called “dragon’s blood” (sangre de drago) and can be used, for example, as a liquid adhesive strip with an antibacterial effect. Rainforests are truly a pharmacological gold mine. Today, one in every four drugs contains substances that have been obtained from rainforest plants. Only 5,000 plant species have been fully analyzed scientifically for their suitability as a drug. How many of the urgently needed drugs to treat cancer or AIDS could we have already if, instead of the 5,000 known plant species, all 240,000 species that are native to tropical rainforests were analyzed? The OECD (Organisation for Economic Co-operation and Development) estimates the value of the global biodiversity “hot spots” for drug development alone at more than €7,500 per hectare.

Work assignments

1. Find examples of medically useful substances from tropical rainforests.
(Corresponding links are provided in the link list for this inquiry task).
2. Select five of the substances that you found and create an overview table with the following content:
 - Medically active substance
 - Name of the animal or plant from which the substance is obtained
 - Geographical region where the animal or plant occurs
 - Indication for which the active ingredient is used in modern medicine
 - If applicable, indication for which the active ingredient is traditionally used by the people who live in rainforests
3. Now select one plant or one animal from your list and find out how the tropical rainforest in which this plant or animal occurs is doing. Is this rainforest region threatened?
4. Think about five drugs that you are familiar with or perhaps even take yourself and investigate which active ingredients they contain. Do the active ingredients they contain come from rainforests? Compare this list with your list from question 1.

For further study

Medically active ingredients from tropical rainforests have already become an economic factor. Pharmaceutical companies sometimes generate huge profits with drugs they produce from these active ingredients, for example, from the Madagascar evergreen tree to increase the chances for a cure for Hodgkin's disease. However, the companies do not help themselves only to the "raw materials" in tropical rainforests, but also use the traditional medical knowledge of indigenous peoples – without sharing the profits from marketing the drugs with them.

1. Investigate the term "biopiracy" and summarize what it means.
2. The 2010 Nagoya Protocol was an initial attempt to counteract biopiracy at an international level. What are the objectives of the protocol? What else is being undertaken to fight biopiracy? Collect facts and write them down.